

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	600	"movable grid"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L2	98	"movable grids"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L3	4927	"graphical user interface" and grid	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L4	4927	"graphical user interface" and grid and user	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L5	27	"graphical user interface" and grid and user and "parallel lines" and intersect	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L6	2013	"graphical user interface" and grid and "user input"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L7	98	"graphical user interface" and grid and "user input" and lines and "graphic object"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L8	1014	715/530	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05

## EAST Search History

L9	424	715/517	USPAT	OR	OFF	2006/09/20 13:05
L10	28	"grid creation"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L11	348	715/503	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L12	1	"20030229856"	US-PGPUB; USPAT	OR	OFF	2006/09/20 13:05
L13	13478	grid and computer and graphic object and drag and snap	US-PGPUB; USPAT	OR	OFF	2006/09/20 13:05
L14	600	"movable grid"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L15	4927	"graphical user interface" and grid	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L16	4927	"graphical user interface" and grid and user	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L17	2013	"graphical user interface" and grid and "user input"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L18	1014	715/530	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L19	424	715/517	USPAT	OR	OFF	2006/09/20 13:05

## EAST Search History

L20	13478	grid and computer and graphic object and drag and snap	US-PGPUB; USPAT	OR	OFF	2006/09/20 13:05
L21	1	"20030229856"	US-PGPUB; USPAT	OR	OFF	2006/09/20 13:05
L22	98	"movable grids"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L23	27	"graphical user interface" and grid and user and "parallel lines" and intersect	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L24	98	"graphical user interface" and grid and "user input" and lines and "graphic object"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L25	28	"grid creation"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05
L26	348	715/503	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/09/20 13:05



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### 1 [Automatic synthesis of graphical object descriptions](#)



Mark Friedell

January 1984

**ACM SIGGRAPH Computer Graphics , Proceedings of the 11th annual conference on Computer graphics and interactive techniques SIGGRAPH '84**, Volume 18 Issue 3

Publisher: ACM Press

Full text available: pdf(908.62 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A technique is presented for automatically synthesizing graphical object descriptions from high-level specifications. The technique includes mechanisms for describing, selecting, and combining primitive elements of object descriptions. Underlying these mechanisms are a referential framework for describing information used in the construction of object descriptions and a computational model of the object-synthesis process. This technique has been implemented in two prototype systems ...

### 2 [A study of blind drawing practice: creating graphical information without the visual channel](#)



Hesham M. Kamel, James A. Landay

November 2000

**Proceedings of the fourth international ACM conference on Assistive technologies**

Publisher: ACM Press

Full text available: pdf(3.56 MB)

 Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** GUIs for blind users, contextual inquiry, feedback, grid, non-visual drawing tools

### 3 [Applying cartoon animation techniques to graphical user interfaces](#)



Bruce H. Thomas, Paul Calder

September 2001

**ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 8 Issue 3

Publisher: ACM Press

Full text available: pdf(1.65 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

If judiciously applied, animation techniques can enhance the look and feel of computer applications that present a graphical human interface. Such techniques can smooth the rough edges and abrupt transitions common in many current graphical interfaces, and strengthen the illusion of direct manipulation that many interfaces strive to present. To date, few applications include such animation techniques. One possible reason is that animated interfaces are difficult to implement: they are difficult ...

**Keywords:** Animation, direct manipulation, graphical user interfaces, graphics, toolkits

4 Hypermedia and Graphics 1: Authoring graphics-rich and interactive documents in CGLIB: a constraint-based graphics library



Neng-Fa Zhou

November 2001 **Proceedings of the 2001 ACM Symposium on Document engineering**

**Publisher:** ACM Press

Full text available: [pdf\(329.15 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

CGLIB is a high-level graphics library for B-Prolog, a constraint logic programming system. The library provides primitives for creating and manipulating graphical objects and a set of constraints including non-overlap, grid, table, and tree constraints that facilitates the specification of the layouts of objects. The library adopts a construct called *action rules* available in B-Prolog for creating agents and programming interactions among agents or between agents and the user. The library ...

**Keywords:** Prolog, action rules, agents, constraints, graphical user interface design, graphics programming, programming languages

5 An object-oriented approach to graphical interfaces



Paul S. Barth

April 1986 **ACM Transactions on Graphics (TOG)**, Volume 5 Issue 2

**Publisher:** ACM Press

Full text available: [pdf\(2.23 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

An object-oriented system for building graphical interfaces to programs is discussed. The system, called GROW, facilitates the process of creating interfaces that are highly interactive (including direct manipulation and animation), rich in layout structure, and effectively reusable across applications. These properties are achieved through three techniques: object-based graphics with taxonomic inheritance, interobject relationships such as composition and graphical dependency, and separation ...

6 Smart interaction techniques 1: Snap-and-go: helping users align objects without the modality of traditional snapping



Patrick Baudisch, Edward Cutrell, Ken Hinckley, Adam Eversole

April 2005 **Proceedings of the SIGCHI conference on Human factors in computing systems**

**Publisher:** ACM Press

Full text available: [pdf\(553.98 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Snapping is a widely used technique that helps users position graphical objects precisely, e.g., to align them with a grid or other graphical objects. Unfortunately, whenever users want to position a dragged object *close* to such an aligned location, they first need to deactivate snapping. We propose *snap-and-go*, a snapping technique that overcomes this limitation. By merely stopping dragged objects at aligned positions, rather than "warping" them there, snap-and-go helps users align ...

**Keywords:** alignment, mouse input, pseudo haptics, snap-dragging, snapping

7 Controllable smoke animation with guiding objects



Lin Shi, Yizhou Yu

January 2005 **ACM Transactions on Graphics (TOG)**, Volume 24 Issue 1

**Publisher:** ACM Press

Full text available: [pdf\(246.85 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This article addresses the problem of controlling the density and dynamics of smoke (a gas phenomenon) so that the synthetic appearance of the smoke (gas) resembles a still or moving object. Both the smoke region and the target object are represented as implicit functions. As a part of the target implicit function, a shape transformation is generated between an initial smoke region and the target object. In order to match the smoke surface with the target surface, we impose carefully designed ...

**Keywords:** Constrained animation, fluid simulation, implicit functions, level sets, shape matching, shape transformations, velocity constraints

## 8 Visual techniques for traditional and multimedia layouts



Jean Vanderdonckt, Xavier Gillo

June 1994 **Proceedings of the workshop on Advanced visual interfaces**

**Publisher:** ACM Press

Full text available: pdf(2.64 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Character User Interfaces (CUI) generally display only pieces of text and semi-graphical objects, whereas Graphical User Interfaces (GUI) display interaction objects (IO) such as icons, check boxes, list boxes, radio buttons and push buttons. Traditional GUI do not often go beyond such existing IO. Multimedia GUI add interactive objects such as pictures, images, video sequences that could serve as a base for sophisticated user interaction. All these types of user interfaces have in common t ...

**Keywords:** graphical applications, grid, interaction objects, interactive objects, layout, multimedia applications, visual interaction, visual interface design and management, visual placement, visual techniques

## 9 Analyzing bounding boxes for object intersection



Subhash Suri, Philip M. Hubbard, John F. Hughes

July 1999 **ACM Transactions on Graphics (TOG)**, Volume 18 Issue 3

**Publisher:** ACM Press

Full text available: pdf(165.69 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Heuristics that exploit bounding boxes are common in algorithms for rendering, modeling, and animation. While experience has shown that bounding boxes improve the performance of these algorithms in practice, the previous theoretical analysis has concluded that bounding boxes perform poorly in the worst case. This paper reconciles this discrepancy by analyzing intersections among  $n$  geometric objects in terms of two parameters:  $\alpha$ ; an upper bound on the aspect ratio  $\alpha < \dots$

**Keywords:** aspect ratio, bounding boxes, collision detection

## 10 Dynamic view-dependent partitioning for structured grids with complex boundaries for object-order rendering techniques



Lance C. Burton, Raghu Machiraju, Donna S. Reese

October 1999 **Proceedings of the 1999 IEEE symposium on Parallel visualization and graphics**

**Publisher:** ACM Press

Full text available: pdf(568.95 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Object-order rendering techniques present an attractive approach to run-time visualization of structured grid data, particularly when combined with a parallel rendering paradigm such as image composition. The ability of this combination to exploit hardware exceeds that of parallel image order methods. However, certain configurations of grid boundaries prevent composition from being performed correctly. In particular, when the boundary between two partitions contains concave sections ...

# 11 Exploring bimanual camera control and object manipulation in 3D graphics interfaces



Ravin Balakrishnan, Gordon Kurtenbach

May 1999 **Proceedings of the SIGCHI conference on Human factors in computing systems: the CHI is the limit**

Publisher: ACM Press

Full text available: pdf(1.06 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We explore the use of the non-dominant hand to control a virtual camera while the dominant hand performs other tasks in a virtual 3D scene. Two experiments and an informal study are presented which evaluate this interaction style by comparing it to the status-quo unimanual interaction. In the first experiment, we find that for a target selection task, performance using the bimanual technique was 20% faster. Experiment 2 compared performance in a more complicated object docking task. P ...

**Keywords:** 3D interfaces, bimanual input, camera control, empirical evaluation, interaction techniques

# 12 Collision detection and proximity queries



Sunil Hadap, Dave Eberle, Pascal Volino, Ming C. Lin, Stephane Redon, Christer Ericson

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(11.22 MB)

Additional Information: [full citation](#), [abstract](#)

This course will primarily cover widely accepted and proved methodologies in collision detection. In addition more advanced or recent topics such as continuous collision detection, ADFs, and using graphics hardware will be introduced. When appropriate the methods discussed will be tied to familiar applications such as rigid body and cloth simulation, and will be compared. The course is a good overview for those developing applications in physically based modeling, VR, haptics, and robotics.

# 13 Determination of mass properties of polygonal CSG objects in parallel



Chandrasekhar Narayanaswami, William Randolph Franklin

May 1991 **Proceedings of the first ACM symposium on Solid modeling foundations and CAD/CAM applications**

Publisher: ACM Press

Full text available: pdf(1.01 MB)

Additional Information: [full citation](#), [references](#), [index terms](#)

# 14 Level set and PDE methods for computer graphics



David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(17.07 MB)

Additional Information: [full citation](#), [abstract](#), [citations](#)

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

# 15 The design and implementation of an object-oriented toolkit for 3D graphics and visualization

William J. Schroeder, Kenneth M. Martin, William E. Lorensen

October 1996 **Proceedings of the 7th conference on Visualization '96**

**Publisher:** IEEE Computer Society Press

Full text available:  pdf(943.80 KB)



[Publisher Site](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

16 New Techniques for Ray Tracing Procedurally Defined Objects



James T. Kajiya

July 1983 **ACM Transactions on Graphics (TOG)**, Volume 2 Issue 3

**Publisher:** ACM Press

Full text available:  pdf(1.18 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

17 Shape-based retrieval and analysis of 3D models



Thomas Funkhouser, Michael Kazhdan

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes SIGGRAPH '04**

**Publisher:** ACM Press

Full text available:  pdf(12.56 MB) Additional Information: [full citation](#), [abstract](#)

Large repositories of 3D data are rapidly becoming available in several fields, including mechanical CAD, molecular biology, and computer graphics. As the number of 3D models grows, there is an increasing need for computer algorithms to help people find the interesting ones and discover relationships between them. Unfortunately, traditional text-based search techniques are not always effective for 3D models, especially when queries are geometric in nature (e.g., find me objects that fit into thi ...

18 Hidden Line Elimination in Projected Grid Surfaces



D. P. Anderson

October 1982 **ACM Transactions on Graphics (TOG)**, Volume 1 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(726.02 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** function graphing, grid surface, hidden line elimination, hidden surface elimination

19 Constant density visualizations of non-uniform distributions of data



Allison Woodruff, James Landay, Michael Stonebraker

November 1998 **Proceedings of the 11th annual ACM symposium on User interface software and technology**

**Publisher:** ACM Press

Full text available:  pdf(131.84 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** clutter, constant information density, multiscale interfaces, non-uniform distributions, visualization

20 New techniques for ray tracing procedurally defined objects



James T. Kajiya

July 1983 **ACM SIGGRAPH Computer Graphics , Proceedings of the 10th annual conference on Computer graphics and interactive techniques SIGGRAPH '83**, Volume 17 Issue 3

**Publisher:** ACM Press



Full text available:  pdf(1.07 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present new algorithms for efficient ray tracing of three procedurally defined objects: fractal surfaces, prisms, and surfaces of revolution. The fractal surface algorithm performs recursive subdivision adaptively. Subsurfaces which cannot intersect a given ray are culled from further consideration. The prism algorithm transforms the three dimensional ray-surface intersection problem into a two dimensional ray-curve intersection problem, which is solved by the method of strip trees. The ...

**Keywords:** Computer graphics, Fractal surfaces, Procedural modelling, Raster graphics, Ray tracing, Stochastic models, Strip trees, Surfaces of revolution

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